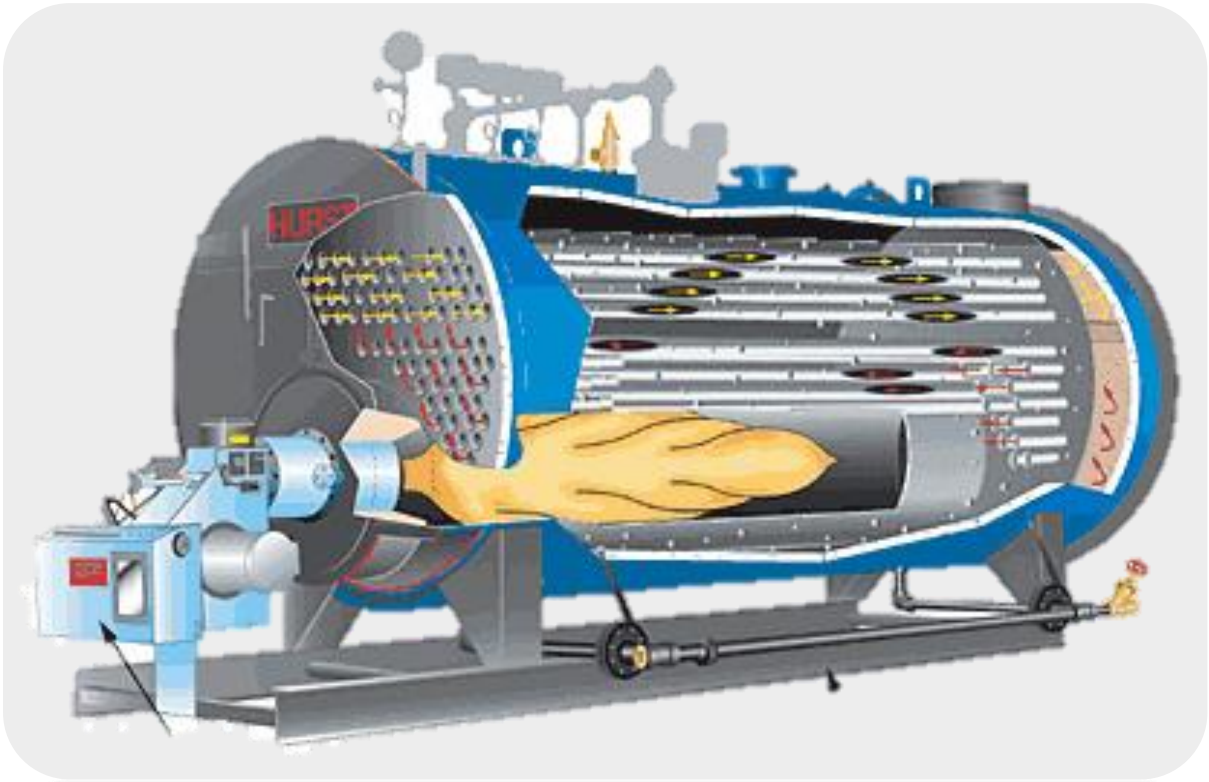
ICTD
المركز العالمي للتدريب والتطوير
International Centre For Training & Development



MUE206

Boiler Start-Up, Shutdown & Troubleshooting

Course Introduction:

Boiler is one of the most basic and indispensable components of our modern technological society. It is essential to virtually all manufacturing processes and every energy production and supply system.

Boiler systems are financial investments, yet the methods for protecting these investments vary widely. Proper maintenance and operation of boiler systems is important with regard to efficiency and reliability. Without this attention, boilers can be very dangerous.

The purpose of this course is to identify the general types of boiler which are available and to take a look at not only how to go about selecting a particular boiler from a group of boilers but also how to install, operate, and maintain the selected boiler.

Course Objectives:

Upon successful completion of this course, the delegates will be able to:

- ✓ Review the different types of boilers
- ✓ Describe the appropriate operation by learning the boiler systems
- ✓ Highlight the effect of water quality on boiler performance
- ✓ Discuss the safety and control systems in boilers
- ✓ Learn the importance and main methods of boiler maintenance
- ✓ Be familiar with the right procedure for pinpointing & eliminating boiler problems

Who Should Attend?

The course is prepared for employees, whose responsibilities involve the design, selection, purchasing, operation or maintenance of boilers, ranging from small boilers normally used in building heating systems, to large boilers used in power stations. Top staff can update and refresh their knowledge by attending this course.

Course Outline:

Day 1:

Introduction to Boilers

- Steam - The Energy Fluid

- Methods of Distributing Energy
- The Steam and Condensate Loop
- Boiler Basics

Boiler Operations

- Fire-tube "Shell" Boilers
- Water-tube Boilers
- Miscellaneous Boiler Types, Economizers and Super heaters
- Boiler Efficiency and Combustion

Day 2:

Combustion in Steam Generation and Fuel Analysis

- Combustion and types of fuel
- Fuel combustion
- Fuel analysis
- Element of Combustion

Steam Generator Theory

- Formation of steam in a boiler
- Sensible and latent heat
- Production of super-heated steam

Day 3:

Steam Generator, Auxiliaries, Design and Construction

- Water circulating and feed pump
- Forced draft fan
- Air pre-heaters
- Design of HRSG ,fire tube boiler and water tube boiler

Boiler Performance and Efficiency Calculation

- Introduction to normal operation
- Factors affecting on efficiency
- Efficiency calculation

Day 4:

Fossil Fuel Boiler Operation

- Light oil processing
- heavy oil processing
- burns and atomization

- boiler flame observation
- preparation of startup
- boiler warm-pup
- basic shut down procedures

Day 5:

Boiler Maintenance

- Boiler Fittings and Mountings
- Boiler cleaning
- Testing Requirements in the Boiler House
- External chambers (float or probe type controls)
- Testing requirements in the unmanned boiler house
- Automatic test system for direct mounted float type level controls
- Testing steam boiler control systems

Course Certificate:

International Center for Training & Development (**ICTD**) will award an internationally recognized certificate(s) for each delegate on completion of training.

Course Methodology:

A variety of methodologies will be used during the course that includes:

- (30%) Based on Case Studies
- (30%) Techniques
- (30%) Role Play
- (10%) Concepts
- Pre-test and Post-test
- Variety of Learning Methods
- Lectures
- Case Studies and Self Questionaires
- Group Work
- Discussion
- Presentation

Course Fees:

To be advised as per the course location. This rate includes participant's manual, and-Outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Timings:

Daily Course Timings:

08:00 - 08:20	Morning Coffee/Tea
08:20 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:30	Recess (Coffee/Tea/Snacks)
13:30 - 15:00	Last Session